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Economic impact of COVID-19 on community pharmacy

Elham Alshammari^{*1}, Dalal Bin Suaydan¹, Sarah Alhussain¹, Nada Alsaleh^{2,1}, Ahlam Alshammari³¹Department of Pharmacy Practice, College of Pharmacy, Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia.²Department of Pharmacy, Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK³Department of Pharmacy, Medical Service Authority, Military Medical Complex, Kuwait.

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ABSTRACT

The onset of COVID-19 has harmed community pharmacy. As a result, the current study sought to investigate how the coronavirus disease affected community pharmacies from an economic perspective. Short interviews were conducted with 158 community pharmacies located in Riyadh, Saudi Arabia. The findings showed that most of the community pharmacies incurred losses of over 10% as a result of the COVID-19 pandemic during its first month in Saudi Arabia. Specifically, the findings revealed that 19.6% of the pharmacies had a 0.1-2% profit during the first month, 1.9% had 10%+ profit, while 13.9% experienced a drop in profits. According to the findings, 41.8% (n = 66) of the pharmacists were not sure what they dispensed during the first month of COVID 19. However, almost one out of every five pharmacies (n = 31, 19.6%) accepted that they mostly dispensed antipyretic, vitamins, face mask and sanitisers. It could take many years from now until researchers can understand and measure the coronavirus disease as required. Based on these outcomes and possibilities, the study recommends that the Saudi Arabia Ministry of Health intervene to enlighten the public on appropriate health practices. Besides, the Ministry of Health may consider engaging with policymakers in developing financial policies that protect community pharmacies and the private sector from potential losses. Moreover, the Ministry of Health may expand the role of community pharmacies to allow them to offer home care services.

*Corresponding Author

Name: Elham Alshammari

Phone:

Email: ejalshammari@pnu.edu.sa

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INTRODUCTION

An announcement made by the World Health Organization (WHO) on 30th January 2020 declared the

novel coronavirus disease (COVID-19) a worldwide pandemic (Sohrabi *et al.*, 2020). Until 10th June, there were 7,145,539 confirmed cases and a total of 408,025 deaths globally. In Saudi Arabia alone, 108,571 cases and 783 deaths had been confirmed at the time of the study (WHO, 2020b). Transmission in the country is now believed to be in clusters of cases. Since being declared a pandemic, the coronavirus disease has hurt many countries, more so on those with weak healthcare systems. WHO has developed protocols to interrupt the spread of the coronavirus disease, but the primary objective of each country has been to reduce its economic impact. (Sohrabi *et al.*, 2020).

Interim guidance from the WHO lists specific procedures for employers and managers in health facilities

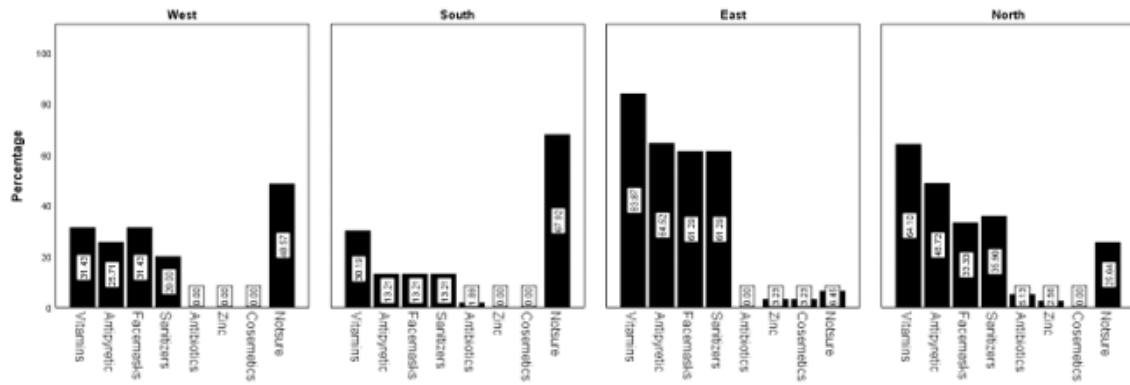


Figure 1: Percentage of dispensed items by region

ties to keep high standards of occupational health and safety. For instance, managers in health facilities are required to assume the general responsibility of making sure that all the prerequisite and protective procedures are taken into consideration to reduce risks associated with occupational safety and health. Besides, WHO requires managers to uphold suitable working hours for their employees with breaks (WHO, 2020a). These and many other guidelines are meant to raise awareness and assess the risk of the coronavirus disease in the workplace and ensure that health workers provide the best services to people who contract the disease (Alshammari, 2020; Alshammari et al., 2020).

Apart from seeking help from health facilities, people who contract COVID-19 have also found advice from family physicians. According to recent research, family doctors serve as the initial point of professional contact for patients and are responsible for identifying most cases of COVID-19 in patients that exhibit respiratory symptoms. Despite their effectiveness in dealing with the virus, family physicians still require better support from local health authorities to facilitate the better supply of personal protective equipment (PPE), guarantee guided management of patients, and ensure better availability of quick diagnostic tests. (Yu et al., 2020).

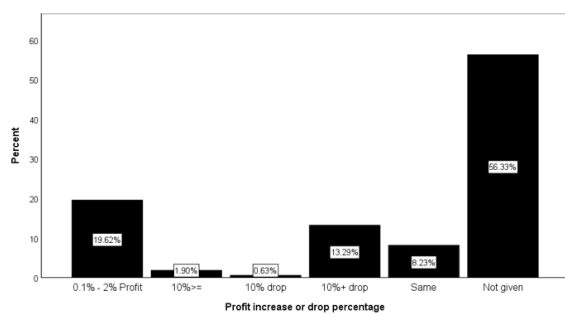


Figure 2: Profit or Drop percentage

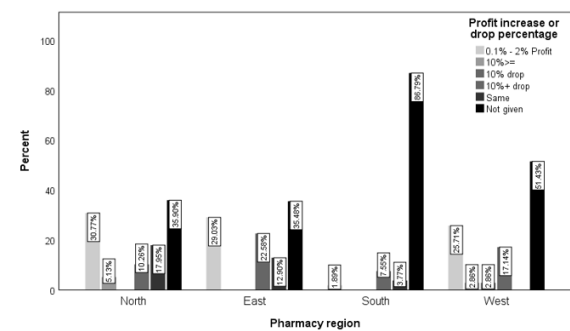


Figure 3: Profit increase or drop by region

All the same, the coronavirus disease has also had a significant impact on pharmacists. Specifically, the increase in the number of highly infectious patients has led to a momentous reorganisation of the inpatient pharmacy models used in clinical care. For instance, the organisational and clinical expectations of inpatient pharmacy departments have suddenly changed due to the complex context in which pharmacists in affected areas are currently working. Pharmacies are now expected to be adaptable for them to continue providing useful prescription treatment during the coronavirus pandemic. COVID-19 has modified the workload in most pharmacies, creating an increased need to compound, handle, and deliver intravenous medications for high-acuity patients. Because of this modification, many pharmacies have had to restructure their technicians and pharmacists and engage in infrequent use of labour-pool resources. Findings indicate that the number of new order verifications went down from about 5,000 orders each day to 3,300 per day during the pandemic period. The pandemic period also saw a reduction in the median daily pharmacokinetic dosing consults. However, the pharmacist interventions reported each day did not change much; some medications that were dispensed extensively, including hydroxychloroquine, enoxaparin,

azithromycin, as well as sedative medications. In sum, the onset of COVID-19 led to a reduction in orders for new drugs, verification of orders, and consultations associated with pharmacokinetic during the period of study in (McConachie *et al.*, 2020).

Past literature also reports that the supply of reasonably priced and high-quality pharmaceuticals has been full of twists and turns since the onset of the COVID-19 pandemic. For instance, there has been a shortage of injectable drugs and parenteral products that are required to place COVID-19 patients on ventilators and maintain them in a state of ventilation. While these shortages call into question the global drug supply system, (Gurvich and Hussain, 2020) proposed the reshoring of the pharmaceutical supply chain to enhance its reliability.

Previous studies have also emphasised the use of a multi-phase emergency response approach in dealing with the coronavirus disease, more so in nursing homes. Primarily, this is because nursing homes have turned out to be the starting point for COVID-19, especially in North America. According to the many dwellings have reported increased outbreaks leading to acute morbidity and mortality. A suitable multi-phase emergency response approach would entail engagement, the building of trust and relationships; team-building and establishment of protocols for an immediate response; guidelines for engaging in early phase response; and approaches to stabilisation and transition (Stall *et al.*, 2020). The idea of home support has been emphasised by examining data of older adults diagnosed with mild cognitive impairment or mild dementia, observed that most of the COVID-19 patients in confinement had satisfactory physical and mental wellbeing. However, those living alone reported increased levels of negative feelings and challenges in getting sleep. In return, they proposed a home support model designed to keep vulnerable individuals informed about the COVID-19 situation and help them access health and social services. Home support would also ensure that individuals have the support network required to prevent exposure to coronavirus disease, guarantee the supply of food and medicine, and encourage good daily routines (Goodman-Casanova *et al.*, 2020).

From the above observations, the COVID-19 outbreak likely resulted in people over-stocking their homes with unnecessary medications. A recent study showed that the coronavirus pandemic caused an increase in counterfeit medicine sales. Besides, there was an increase in fake medicines considered to be "essential" in the treatment, key examples being drug chloroquine and hydroxychloro-

quine. After claims that hydroxychloroquine could treat COVID-19, there was an increase in demand and a decrease in the global supply, resulting in drug shortages. These cases are mainly attributed to the decline in the production capacities of China and India, which are considered to be the largest producers of medical supplies in the world. (Erku *et al.*, 2020).

At the same time, most people do not have adequate knowledge of how to dispose of medications that are either unused or expired. (AlAzmi *et al.*, 2017). The research revealed that 73% of the study participants threw their medicines in the trash, 14% returned them to the pharmacy, 5% did not dispose of them, while 3% donated them to friends or charity centres. Additionally, most of the respondents suggested that they did not receive guidelines from healthcare providers concerning the safe and proper disposal of medications. The lack of knowledge can lead to unwanted effects, overstocking, abuse of drug prescriptions, accidental overdose, or even death. At the moment, there are no standardised guidelines on how to dispose of the waste medication safely. As noted, there is an immediate need to develop joint and uniform guidelines that can facilitate the safe disposal of any remaining medications. (AlAzmi *et al.*, 2017).

In line with the previous findings, community pharmacists can play a central role in preventing the misuse of medication and reduce the associated costs. This is evident in a recent paper that examined counselling practices of community pharmacists located in Riyadh, Saudi Arabia. The authors recommended the need for policymakers, researchers, and stakeholders working together to develop interventions that can enhance the existing practices at community pharmacies across the nation (Alaqeel and Abanmy, 2015).

MATERIALS AND METHODS

The primary objective of the study was to investigate how COVID-19 affected community pharmacies economically. From a secondary perspective, the study also sought to examine whether the coronavirus disease had an impact on pharmacy personnel. To meet these objectives, the study followed a prospective study design. A short interview was designed, featuring questions on the most dispensed prescriptions during the first month of COVID-19 pandemic, the average monthly income before the virus, average profit during the first month of the virus, whether the epidemic had increased working hours, and whether the virus had fuelled the need for more personnel. Data obtained from the short interview

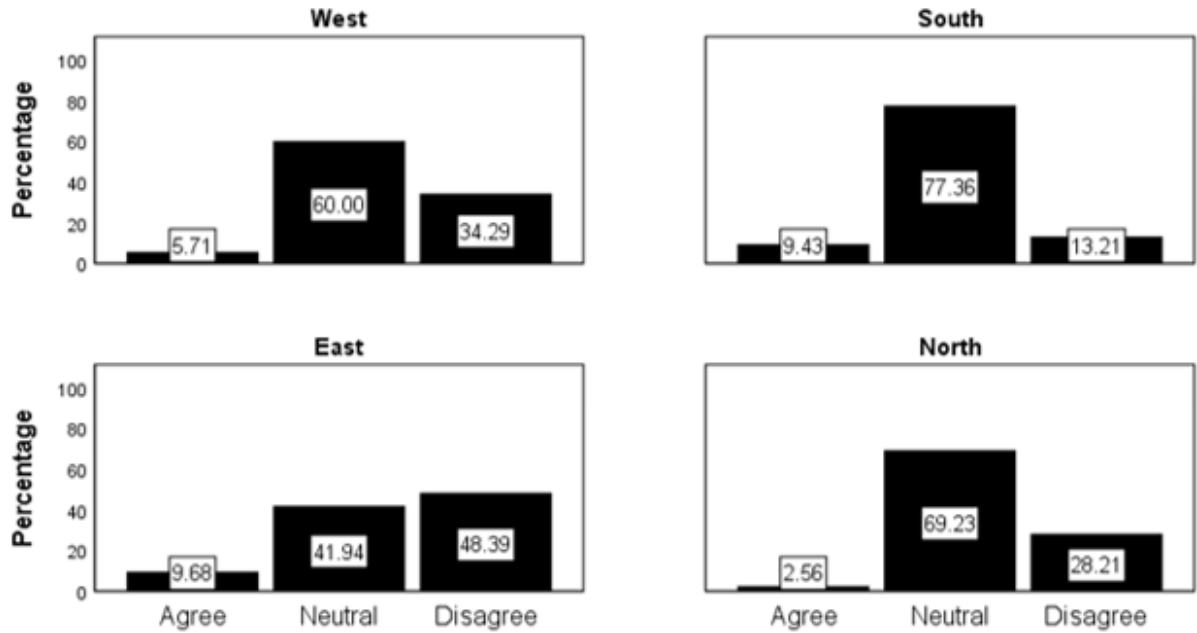


Figure 4: The COVID-19 pandemic seems to have catastrophic consequences for working hours (increased working hours) by region

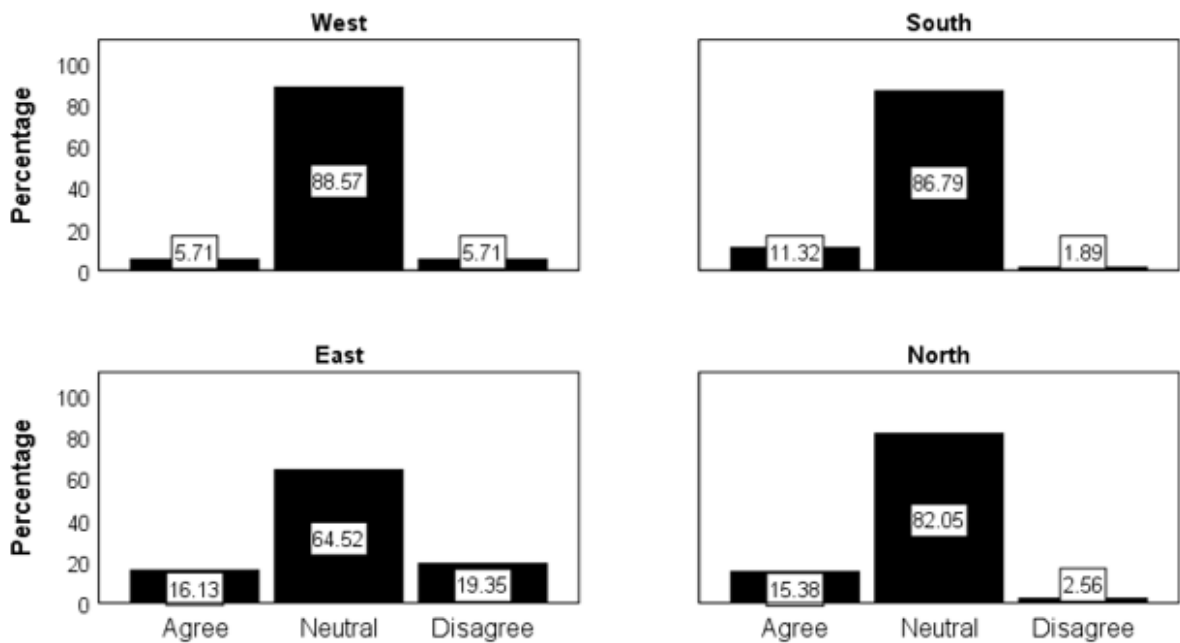


Figure 5: The COVID-19 pandemic seems to have increased the need for number of working personnel by region

Table 1: Region of the pharmacies

| | Frequency | Percent |
|-------|-----------|---------|
| North | 39 | 24.7 |
| East | 31 | 19.6 |
| South | 53 | 33.5 |
| West | 35 | 22.2 |
| Total | 158 | 100.0 |

Table 2: Most dispensed substances

| | Frequency | Percent |
|---|-----------|---------|
| Not sure | 66 | 41.8 |
| Antipyretic; Vitamins; Face Mask; Sanitizers | 31 | 19.6 |
| Vitamins | 21 | 13.3 |
| Antipyretic; Vitamins | 8 | 5.1 |
| Antipyretic | 6 | 3.8 |
| Vitamins; Face Mask | 5 | 3.2 |
| Face Mask; Sanitizers | 4 | 2.5 |
| Vitamins; Face Mask; Sanitizers | 3 | 1.9 |
| Sanitizers | 2 | 1.3 |
| Antipyretic; Vitamins; Face Mask; Sanitizers; Zinc | 3 | 1.9 |
| Vitamins; Sanitizers | 1 | 0.6 |
| Antipyretic; Antibiotics | 1 | 0.6 |
| Antipyretic; Face Mask | 1 | 0.6 |
| Antipyretic; Face Mask; Sanitizers | 1 | 0.6 |
| Antipyretic; Vitamins; Face Mask | 1 | 0.6 |
| Antipyretic; Vitamins; Face Mask; Sanitizers; Antibiotics | 1 | 0.6 |
| Antipyretic; Vitamins; Sanitizers | 1 | 0.6 |
| Vitamins; Cosmetics | 1 | 0.6 |
| Vitamins; Zinc | 1 | 0.6 |
| Total | 158 | 100.0 |

Table 3: Dispensed substances by region

| Dispensed substance | Vitamins | Antipyretic | Facemasks | Sanitizers |
|-----------------------|-------------|-------------|-----------|------------|
| Pharmacy region North | 25 | 19 | 13 | 14 |
| East | 26 | 20 | 19 | 19 |
| South | 16 | 7 | 7 | 7 |
| West | 11 | 9 | 11 | 7 |
| Dispensed substance | Antibiotics | Zinc | Cosmetics | Not sure |
| Pharmacy region North | 2 | 1 | 0 | 10 |
| East | 0 | 1 | 1 | 2 |
| South | 1 | 0 | 0 | 36 |
| West | 0 | 0 | 0 | 17 |

Table 4: Dispensed substances percentage by region

| Dispensed substance | Vitamins | Antipyretic | Face masks | Sanitizers |
|-----------------------|-------------|-------------|------------|------------|
| Pharmacy region North | 64.1%* | 48.7% | 33.3% | 35.9% |
| East | 83.9% | 64.5% | 61.3% | 61.3% |
| South | 30.2% | 13.2% | 13.2% | 13.2% |
| West | 31.4% | 25.7% | 31.4% | 20.0% |
| Dispensed substance | Antibiotics | Zinc | Cosmetics | Not sure |
| Pharmacy region North | 5.1% | 2.6% | 0.0% | 25.6% |
| East | 0.0% | 3.2% | 3.2% | 6.5% |
| South | 1.9% | 0.0% | 0.0% | 67.9% |
| West | 0.0% | 0.0% | 0.0% | 48.6% |

*Note. percentage is calculated as follows. In north region 25 participants out of 39 dispensed vitamins. Hence the percentage is $25/39 = 64.1\%$. The above figure Figure 1 was created using those percentages.

Table 5: Approximate monthly income

| | Frequency | Percent |
|-----------|-----------|---------|
| 100000 | 1 | 0.6 |
| 150000 | 2 | 1.3 |
| 200000 | 1 | 0.6 |
| 250000 | 1 | 0.6 |
| 50000 | 1 | 0.6 |
| 500000 | 1 | 0.6 |
| 75000 | 1 | 0.6 |
| Not given | 150 | 94.9 |
| Total | 158 | 100.0 |

Table 6: Approximate profit during the first month of COVID-19

| | Frequency | Percent |
|-------------------------------------|-----------|---------|
| 20000 to 30000 | 1 | 0.6 |
| 30000 | 2 | 1.3 |
| 45000 | 1 | 0.6 |
| 50000 | 1 | 0.6 |
| 500000 | 1 | 0.6 |
| 75000 | 1 | 0.6 |
| 8000 to 10,000 | 1 | 0.6 |
| 80000 | 1 | 0.6 |
| Not given | 146 | 92.4 |
| Same before and during the pandemic | 3 | 1.9 |
| Total | 158 | 100.0 |

Table 7: Approximate profit percentage

| | Frequency | Percent |
|------------------|-----------|---------|
| 0.1% - 2% Profit | 31 | 19.6 |
| 10%>= | 3 | 1.9 |
| 10% drop | 1 | .6 |
| 10%+ drop | 21 | 13.3 |
| Same | 13 | 8.2 |
| Not given | 89 | 56.3 |
| Total | 158 | 100.0 |

Table 8: COVID-19 pandemic seems to have a catastrophic consequence for working hours

| | Frequency | Percent |
|----------|-----------|---------|
| Agree | 11 | 7.0 |
| Disagree | 45 | 28.5 |
| Neutral | 102 | 64.6 |
| Total | 158 | 100.0 |

Table 9: COVID-19 pandemic seems increased the need for number of working personnel

| | Frequency | Percent |
|----------|-----------|---------|
| Agree | 19 | 12.0 |
| Disagree | 10 | 6.3 |
| Neutral | 129 | 81.6 |
| Total | 158 | 100.0 |

Table 10: Kruskal-WallisH test

| | The COVID-19 pandemic seems to have catastrophic consequences for working hours (increased working hours) | The COVID-19 pandemic seems to have increased the need for number of working personnel |
|------------------|---|--|
| Kruskal-Wallis H | 10.012 | 3.281 |
| df | 3 | 3 |
| Asymp. Sig. | 0.018 | 0.350 |

Table 11: Mean Rank

| Pharmacy region | Nos | Mean Rank |
|-----------------|-----|-----------|
| North | 39 | 81.78 |
| East | 31 | 92.6 |
| South | 53 | 66.88 |
| West | 35 | 84.47 |
| Total | 158 | |

was analysed statistically and represented in the form of frequencies and percentages. Where the participants did not respond to a question, the study considered the answer as not given.

Selection and Description of Participants

Participants in the study included 158 community pharmacies in Riyadh, Saudi Arabia. The pharmacies were tracked using google map and divided geographically based on their location as North, South, East, or West of Riyadh city. Participation in the study was entirely voluntary. Before conducting the interview, approval was sought from the pharmacist-in-charge in each pharmacy. The pharmacist-in-charge was responsible for either accepting or rejecting participation in the study.

RESULTS AND DISCUSSION

Region of the pharmacies

The total sample size was 158 pharmacies. Most of the pharmacies were in the South region (n = 53, 33.5%), while the second most pharmacies were in the north (n = 39, 24.7%). The lowest number of pharmacies were in the East region (n = 31, 19.6%). These findings are illustrated in Table 1.

Most dispensed during the first month of COVID 19

The interview sought to identify substances that were most dispensed in Saudi Arabia during the first month of COVID-19. According to the findings, 41.8% (n = 66) of the pharmacists were not sure what they dispensed during the first month of COVID 19. Almost 1 out of every five pharmacies (n = 31, 19.6%) accepted that they mostly dispensed antipyretic, vitamins, face mask and sanitisers. About 13.3% (n = 21) of the study sample mostly dispensed vitamins. Table 2 provides a summary of findings on most of the dispensed substances Figure 1, Tables 3 and 4 categorise the dispensed substances according to the four regions. For instance, vitamins sold more in the north and east regions. On the contrary, most pharmacists in the south and west were not sure about the substances they dispensed during the first month of the coronavirus disease.

Approximate monthly income before COVID-19 pandemic

The interview also sought to determine the average monthly income of the pharmacists before the COVID-19 pandemic. Out of the responses received

from the participants, it was difficult to make conclusive observations. This was so because 94.9% of the participating pharmacies did not reveal their income during the first month of COVID-19. A summary of the responses resulting from this question is, as shown in Table 5.

Approximate profit during the first month of COVID-19

Next, the participating pharmacies were asked to estimate their profit during the first month of the coronavirus disease. Out of the responses received, it was difficult to make conclusive observations. To explain, 92.4% of the participating pharmacies did not reveal their profit during the first month of COVID-19. Either way, a summary of these findings is as shown in Table 6.

Approximate profit during the first month of COVID-19 pandemic in percentage %

The study sample was asked to estimate their average profit during the first month of COVID-19 as a percentage. The findings revealed that 19.6% of the pharmacies had a 0.1-2% profit during the first month, 1.9% had 10%+ profit, while 13.9% experienced a drop in profits. These findings are as shown in Table 7 and Figure 2.

Profit by region

The profit received by the pharmacies was evaluated based on their region. In the north (30.77%), East (29.03%) and West (25.71%) pharmacies experienced a 0.1-2% profit increase. In the south, there were less than 2% of pharmacists who reported a 0.1-2% increase in profit. Further, north, east and west had more than 10% who experienced 10%+ profit loss. A summary of these findings is, as shown in Figure 3.

COVID-19 pandemic seems to have a catastrophic consequence for working hours and increased the need for the number of working personnel

The next element of the interview sought to determine whether COVID-19 had increased the need for more working personnel. The majority (n = 102, 64.6%) chose to remain neutral concerning this matter. However, 1 out of every 4 (n = 45, 28.5%) disagreed and thought that the COVID-19 pandemic had decreased the need for more working personnel. The vast majority (n = 129, 81.6%) remained neutral concerning this question. Only 12% agreed with the fact that the coronavirus disease had resulted in a catastrophic impact on working hours and led to an increased need for more working personnel. Tables 8 and 9 provide a summary of these findings.

Two Kruskal Wallis h-test were conducted to see whether there is a difference between regions in the responses obtained from the two questions above. The findings revealed that all areas were equal concerning the answers given to the question "the COVID-19 pandemic seems to have increased the need for much working personnel". However, there was a difference in the responses associated with working hours, Kruskal-Wallis H = 10.01, $p < .05$. The west, south and north region pharmacies had a neutral position, but the east region pharmacies mostly disagreed (see Figures 4 and 5). The outcome of the Kruskal Wallis h-test is as shown in Tables 10 and 11.

The coronavirus disease seems to have pushed pharmacies into delivering their services online. The shift to online delivery needs additional people or working time. This is consistent with the findings of this study which suggested that the COVID-19 pandemic has increased the need for more working personnel and had severe consequences on working hours.

In line with the objective of the study, key findings indicate that most pharmacists reported a drop of more than 10% in their profits as a result of the coronavirus pandemic during the first month of the disease. The decline in profits could be because antipyretics and vitamins are cheaper and are dispensed more often compared to other drugs and cosmetics, which are much more expensive. In other words, people prefer ordering essential pharmaceuticals since they are cheaper and avoid buying extra non-medication due to lockdown. These findings are in line with recent research (McConachie *et al.*, 2020) that has shown a reduction in the number of new order verifications as a result of the coronavirus pandemic. , these findings mean that the start of COVID-19 led to a decrease in orders for further medication, confirmation of orders, and consultations associated with dispensing. It is also possible to attribute the losses made to the act of people overstocking their homes with unnecessary medications, leading to a shortage in the supply chain, as noted by (Erku *et al.*, 2020). These and many other factors contribute to a decrease in profits received by pharmacists.

CONCLUSION

The goal of the study was to examine how COVID-19 affected community pharmacies from an economic perspective. The study also investigated whether the novel coronavirus had any impact on pharmacy personnel. Short interviews were conducted with 158 community pharmacies located in Riyadh, Saudi

Arabia. Even though most participants did not provide precise financial data, it was clear that most of the pharmacies experienced losses of more than 10%. In terms of the personnel, the disease had pushed more people into delivering their services online resulting in the need for either more people or working time. Even though the study was conducted for a short time and during the early phases of the COVID-19 outbreak, it is evident that the impact of the coronavirus disease on economies will be extensive. Major questions keep coming up on how community pharmacies will be affected, considering that the aftermath of the coronavirus disease is still unknown. There could be many years between now and when COVID-19 will be clearly understood and measured. As such, the current study recommends that the Saudi Arabia Ministry of Health intervene to promote public understanding of appropriate health practices. Besides, the Ministry of Health could engage with policymakers in designing financial policies that cushion community pharmacies and the private sector from incurring losses. An additional option for the Ministry of Health could be to expand the role of community pharmacies and allow them to offer home care services.

Ethics Approval

We are considering national legislation regulating the safety of human subjects per institutional review board and bioethical standards (IRB Registration Number with KACST, KSA: H-01-R-059, log number: 20-0201).

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Source of Funding

None.

Conflict of Interest

None.

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